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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,818	06/30/2000	Jiann H. Chen	81326D-W	2410

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EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 03/05/2002

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/608,818	Applicant(s) CHEN ET AL	
	Examiner Elena Tsoy	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

Art Unit: 1762

Claim Objections

1. Claim 4 is objected to because of the following informalities: "amino siloxane" should be changed to – aminosiloxane --.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 4, 10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the core" and "the layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al (US 4,853,737) and incorporated by reference Lentz (US 4,257,699) in view of Schlueter, Jr. et al (US 5,995,796).

Art Unit: 1762

Hartley discloses a method of making a fuser member having a support comprising the steps of providing a support (See column 8, lines 9-12); coating onto the support an organic solvent-based coating composition (See column 8, lines 4-6) comprising a fluorocarbon thermoplastic random copolymer, a curing agent having a bisphenol residue (See column 3, lines 5-11), a particulate filler containing a combination of (See column 6, lines 51-52) metal oxides such as zinc oxide, antimony oxide, tin oxide (See column 6, lines 42-53) and aminosiloxane (See column 2, lines 48-50; column 5, lines 27-46), the fluorocarbon thermoplastic random copolymer being commercially available terpolymers of vinylidene fluoride with hexafluoropropylene and tetrafluoroethylene (i.e. terpolymers having subunits of $-(CH_2CF_2)_x-$, $-(CF_2CF(CF_3))_y-$, $-(CF_2CF_2)_z-$) such as Viton B (See column 3, lines 1-3); gradually raising the temperature of the coating composition from 20⁰C to 230⁰C for 12-24 hours and then curing at that temperature for 24 hours (See column 8, lines 26-33). It is well known in the art that Viton B contains about 61 % of vinylidene fluoride, about 17 % of hexafluoropropylene and about 22 % of tetrafluoroethylene, as evidenced by Eddy et al (US 5,017,432). See column 6, lines 4-6.

Hartley further teaches that one skilled in the art can compare the release of various cured fluoroelastomers containing the metal oxides to determine the optimum metal oxide or combination thereof and concentrations thereof. See column 6, lines 49-53.

Hartley fails to teach that the optimum metal oxide combination contains antimony doped tin oxide; and curing time for the coating composition at temperature from 20⁰C to 275⁰C is 5-10 hours.

As to antimony doped tin oxide, Schlueter, Jr. teaches that antimony doped tin oxides (optionally in a combination with other metal oxides such as zinc oxide (See column 4, lines 57-67; column 12, lines 4, 8)) added to a fluoroelastomer/aminosiloxane copolymer allows for a

Art Unit: 1762

stable resistivity virtually unaffected by changes in relative humidity and temperature and provides optimal conductivity (See column 10, lines 25, 40-68) for the filled copolymer (See column 4, lines 1-67; column 5, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used antimony doped tin oxides in a combination with zinc oxide for filling a fluoroelastomer/aminosiloxane copolymer of Hartley with the expectation of providing the desired stable resistivity and optimal conductivity, as taught by Schueter, Jr.

As to the curing time for the coating composition at temperature from 20⁰C to 275⁰C being 5-10 hours, one of ordinary skill in the art would know that curing time depends on materials of a coating composition. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum curing time (including claimed 5-10 hours) of an organic solvent-based coating composition of combination of Hartley and Schlueter, Jr. comprising a fluoroelastomer (containing about 61 % of vinylidene fluoride, about 17 % of hexafluoropropylene and about 22 % of tetrafluoroethylene), zinc oxide, antimony doped tin oxide, aminosiloxane and a bisphenol curing agent.

As to claim 2, Hartley further teaches that aminosiloxane is amino functional polydimethyl siloxane copolymer. See column 5, lines 27-45.

As to claim 3, Hartley further teaches that amino functional unit of polydimethyl siloxane copolymer is (aminoisopropyl)methyl (See column 5, lines 42-46) or aminopropyl (See column 11, lines 5-6).

It is held that compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH₂- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted (aminoisopropyl)methyl of Hartley with its position isomer (aminopropyl)methyl with the expectation of maintaining the desired benefits since a presumed expectation that both compounds possess similar properties.

As to claims 4, 5, 6, Hartley further teaches that aminosiloxane has total concentration in a coated layer of 1-15 percent. See column 5, lines 60-68; column 6, lines 1-8.

As to claims 7, 8, Hartley further teaches that a mixture of fillers containing zinc oxide has total concentration of 10-100 weight percent based on weight of the cured fluoroelastomer. See column 6, lines 3-8, 45-46.

As to claim 9, Hartley further teaches that the fluoroelastomer is cured by bisphenol curing agent. See column 3, lines 5-55.

As to claim 10, Hartley further teaches that the fuser member may optionally contain resilient layers (a cushion layer) between a core and a coating layer. See column 8, lines 9-19.

As to claim 11, Hartley further teaches that the fluoroelastomer is nucleophilic addition cured. See column 3, lines 5-15.

As to claims 12-14, Hartley further teaches that any known fluoroelastomers derived from terpolymers of vinylidene fluoride with hexafluoropropylene and tetrafluoroethylene (i.e.

Art Unit: 1762

terpolymers having subunits of $-(CH_2CF_2)_x-$, $-(CF_2CF(CF_3))_y-$, $-(CF_2CF_2)_z-$ can be used for preparation of fuser roll surfaces. See column 2, lines 39-44; column 3, lines 1-4. It is well known in the art that a fluoroelastomer having x number of 49 mole %, y number of 10 mole % and z number of more than 40 mole %, is commercially available as "3M THV". It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used commercially available fluoroelastomer "3M THV" for coating a fuser member with the expectation of providing the fuser member with the desired benefits, as taught by Hartley.

As to claims 15, Schlueter, Jr. further teaches that antimony doped tin oxide is added to a fluoroelastomer/aminosiloxane copolymer in an amount 5-65 weight percent of total solids. See column 11, lines 57-65.

As to claims 16, antimony doped tin oxide has 6.5 weight percent of antimony. See column 11, line 49.

As to claims 17-20, Hartley further teaches that non-crosslinked fluoroelastomers that have been used for preparation of fuser roll surfaces are known materials such as those described in Lentz (incorporated by reference in Hartley). See column 2, lines 39-44. The known materials of Lentz may be represented as mixtures of fluoroelastomers having molecular weight in the range of 1,000-200,000 (See column 9, lines 21-26) such as Viton B and polytetrafluoroethylene (fluorinated resin) (See column 8, lines 46-56, 65-67; column 9, lines 5-6).

However, Hartley and incorporated by reference Lentz fail to teach that ratio of Viton type fluoroelastomer to PTFE in the mixture is between 1:1 to 50:1.

One of ordinary skill in the art would know that some toners could be only fixed at high temperatures that would require high heat stability of a fuser member. It is well known in the art that addition of PTFE to the Viton type fluoroelastomer would increase heat stability of the

Art Unit: 1762

resulting mixture. Therefore, amount of PTFE in the mixture is result-effective variable in a method of making the fuser member. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum amount of PTFE (including claimed ratio between 1:1 to 50:1) in a mixture with Viton type fluoroelastomer depending on toner to be fixed.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Elena Tsoy
Examiner
Art Unit 1762

February 27, 2002



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